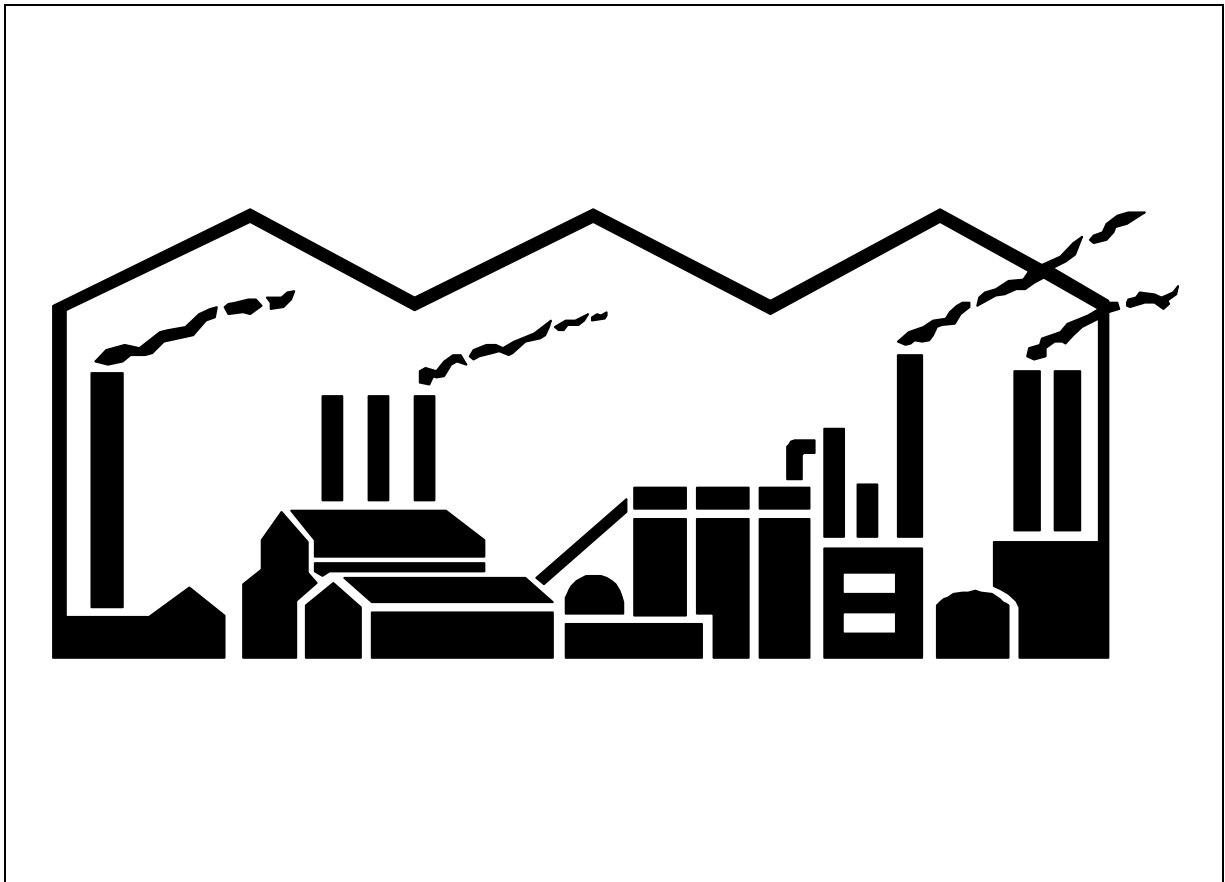


# **CENSUS OF FATAL OCCUPATIONAL INJURIES**



**MICHIGAN, 1999**

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MIOSHA Information Division  
Michigan Dept. of Consumer  
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## **FATAL WORK INJURIES IN MICHIGAN, 1999**

Injuries sustained in transportation accidents resulted in the death of 61 Michigan workers in 1999. This represents 34 percent of the 182 workers fatally injured in Michigan in 1999. Highway accidents accounted for 37 fatalities or 20 percent of the total. Being struck by an object resulted in the death of 11 Michigan workers and 24 others were killed as the result of falls. Assaults and violent acts accounted for 27 deaths or 15 percent of the total. These findings are from the Census of Fatal Occupational Injuries conducted by the Michigan Department of Consumer & Industry Services, MIOSHA Information Division in cooperation with the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor.

The Census of Fatal Occupational Injuries uses multiple sources to identify, verify, and profile work injuries that are fatal. Key information about each workplace fatality (such as occupation and other worker characteristics, equipment being used, and circumstances of the event) is obtained by cross-referencing a variety of source records. These records include death certificates, workers compensation records, and reports to federal and state agencies.

### **1999 CENSUS PROFILES**

Major findings of the Michigan Census are:

- \* Transportation accidents led all other events and accounted for 34 percent of the 182 fatal occupational injuries in 1999. This was followed by Contact with Objects and Equipment at 18 percent and Assaults and Violent Acts with 15 percent. (Table 1)
- \* Sixty three percent of the fatally injured Michigan workers were 25 - 54 years of age.
- \* Nine percent of Michigan's fatally injured workers were women.
- \* Occupations with the largest number of worker fatalities were Handlers, equipment cleaners, helpers and laborers, and Construction trades.
- \* Industry groups with the largest number of Michigan fatal work injuries in 1999 were Construction (41), Manufacturing (38), and Retail Trade (25). (Table 4.)

### **BACKGROUND - CENSUS OF FATAL OCCUPATIONAL INJURY PROGRAM**

The Census of Fatal Occupational Injuries program, part of the BLS safety and health statistics program, provides the most complete count of fatal work injuries available because it uses multiple state and federal data sources. The fatality census is conducted in all 50 states and the District of Columbia.

**Table 1. Number and Percent Distribution of Fatal Occupational Injuries  
by Event or Exposure, Michigan, 1999**

1/ Event or Exposure	<u>Fatalities</u>	
	Number	Percent
<b>Total</b>	<b>182</b>	<b>100</b>
<b>Transportation incidents</b>	<b>61</b>	<b>34</b>
Highway	37	20
Collision between vehicles, mobile equipment	21	12
Moving in opposite directions, oncoming	5	3
Moving in intersection	10	5
Vehicle struck stationary object or equipment on side of road	5	3
Noncollision	8	4
Jack-knifed or overturned – no collision	6	3
Nonhighway (farm, industrial premises)	11	6
Noncollision accident	10	5
Overturned	6	3
Aircraft	4	2
Worker struck by vehicle, mobile equipment	7	4
Worker struck by vehicle, mobile equipment on side of road	3	2
Worker struck by vehicle, mobile equipment in parking lot or non-road area	4	2
<b>Assaults and violent acts</b>	<b>27</b>	<b>15</b>
Homicides	20	11
Shooting	17	9
Self-inflicted injury	6	3
<b>Contact with objects and equipment</b>	<b>33</b>	<b>18</b>
Struck by object	11	6
Struck by falling object	8	4
Caught in or compressed by equipment or objects	15	8
Caught in running equipment or machinery	12	7
Caught in or crushed in collapsing materials	7	4
Excavation or trenching cave-in	4	2

**Table 1. Number and Percent Distribution of Fatal Occupational Injuries  
by Event or Exposure, Michigan, 1999  
(continued)**

1/ Event or Exposure	<u>Fatalities</u>	
	Number	Percent
<b>Falls</b>	<b>24</b>	<b>13</b>
Fall to lower level	22	12
Fall from ladder	5	3
Fall from roof	7	4
Fall from roof edge	4	2
Fall from nonmoving vehicle	4	2
<b>Exposure to harmful substances or environments</b>	<b>18</b>	<b>10</b>
Contact with electric current	10	5
Contact with electric current of machine, tool, appliance, light fixture	3	2
Contact with wiring transformers or other electrical component	3	2
Contact with overhead power lines	4	2
Exposure to caustic, noxious, or allergenic substances	6	3
Inhalation of substance	6	3
Inhalation in open or nonconfined space	5	3
<b>Fires and explosions</b>	<b>18</b>	<b>10</b>
Fires--unintended or uncontrolled	9	5
Fire in residence, building or other structure	8	4
Explosion	9	5
Explosion of pressure vessel or piping	4	2

1/ Based on 1992 BLS Occupational Injury/Illness Classification Manual.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals due to rounding.

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries.

**Table 2. Number and Percent Distribution, of Fatal Occupational Injuries by Selected Characteristics, Michigan, 1999**

Worker Characteristics	Fatalities	
	Number	Percent
<b>Total</b>	<b>182</b>	<b>100</b>
<b>Employee Status</b>		
Wage and salary workers 1/	159	87
Self-employed 2/	23	13
<b>Sex</b>		
Men	166	91
Women	16	9
<b>Age</b>		
Both sexes:		
Under 20 years	8	4
20 to 24 years	23	13
25 to 34 years	34	19
35 to 44 years	47	26
45 to 54 years	34	19
55 to 64 years	24	13
65 years and over	12	7
<b>Race</b>		
White	136	75
Black or African-American	24	13
American Indian or Alaska Native	9	5
Asian	4	2
Other races or not reported	7	4
<b>Hispanic origin</b>		
Hispanic	12	7

1/ May include volunteers and other workers receiving compensation.

2/ Includes paid and unpaid family workers, and may include owners of incorporated businesses, or members of partnerships.

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries.

**Table 3. Number and Percent Distribution of Fatal Occupational  
Injuries by Occupation, Michigan, 1999**

<b>1/ Occupation</b>	<b>Number</b>	<b><u>Fatalities</u> Percent</b>
<b>Total</b>	<b>182</b>	<b>100</b>
<b>Managerial and professional specialty</b>	<b>27</b>	<b>15</b>
Executive, administrative, and managerial	19	10
Managers, food serving and lodging establishments	6	3
Managers, properties and real estate	3	2
Managers and administrators, n.e.c.	9	5
Professional specialty	8	4
<b>Technical sales, and administrative support</b>	<b>16</b>	<b>9</b>
Sales occupations	7	4
Sales workers, retail and personal services	4	2
Administrative support occupations, including clerical	7	4
Mail and message distributing occupations	5	3
Messengers	4	2
<b>Service occupations</b>	<b>17</b>	<b>9</b>
Protective service occupations	4	2
Service occupations except protective and household	13	7
Food preparation and service occupations	7	4
Miscellaneous food preparation occupations	4	2
Cleaning and building service occupations, except household	3	2
<b>Farming, forestry and fishing</b>	<b>13</b>	<b>7</b>
Farming operators and managers	3	2
Other agricultural and related occupations	8	4
Farm occupations, except managerial	4	2
Farm workers	4	2
Related agricultural occupations	4	2
Groundskeepers and gardeners, except farm	3	2



**Table 3. Number and Percent Distribution of Fatal Occupational  
Injuries by Occupation, Michigan, 1999  
(continued)**

<b>1/ Occupation</b>	<b>Number</b>	<b><u>Fatalities</u> Percent</b>
<b>Precision production, craft &amp; repair</b>	<b>40</b>	<b>22</b>
Mechanics and repairers	11	6
Mechanics and repairers, except supervisors	11	6
Vehicle and mobile equipment, mechanics, repairers	5	3
Heavy equipment mechanics	4	2
Construction trades	23	13
Construction trades, except supervisors	22	12
Carpenters and apprentices	5	3
Electricians and apprentices	7	4
Plumbers, pipe fitters, steamfitters and apprentices	3	2
Precision production occupations	6	3
Precision metal working occupations	4	2
<b>Operators, fabricators, and laborers</b>	<b>67</b>	<b>37</b>
Machine operators, assemblers, and inspectors	14	8
Machine operators and tenders, except precision	7	4
Machine operators, assorted materials	4	2
Miscellaneous machine operators, n.e.c.	4	2
Fabricators, assemblers and hand working occupations	6	3
Welders and cutters	3	2
Assemblers	3	2
Transportation and material moving operations	22	12
Motor vehicle operators	17	9
Truck drivers	15	8
Material moving equipment operators	5	3
Handlers, equipment cleaners, helpers and laborers	31	17
Construction laborers	15	8
Freight, stock and material handlers	4	2
Laborers except construction	9	5

1/ Based on the 1990 Occupational Classification System developed by the Bureau of the Census.

NOTE: Totals for major categories may include subcategories not shown separately.  
Percentages may not add to totals due to rounding.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal Agencies, Census of Fatal Occupational Injuries.

**Table 4. Number and Percent Distribution of Fatal Occupational Injuries by Industry, Michigan, 1999**

<b>1/ Industry</b>	<b><u>Fatalities</u></b>	
	<b>Number</b>	<b>Percent</b>
<b>Total</b>	<b>182</b>	<b>100</b>
<b>Private Industry</b>	<b>170</b>	<b>93</b>
<b>Agriculture, forestry, and fishing</b>	<b>12</b>	<b>7</b>
Agriculture production - crops	4	2
Agricultural services	5	3
Crop services	3	2
Crop harvesting	3	2
<b>Construction</b>	<b>41</b>	<b>23</b>
General building contractors	5	3
Residential building construction	3	2
Heavy construction, except building	16	9
Highway and street construction	3	2
Heavy construction, except highway	13	7
Water, sewer and utility lines	10	5
Heavy construction, n.e.c.	3	2
Special trades contractors	20	11
Electrical work	4	2
Roofing, siding and sheet metal work	6	3
Miscellaneous special trade contractors	4	2
<b>Manufacturing</b>	<b>38</b>	<b>21</b>
Lumber and wood products	3	2
Chemicals and allied products	5	3
Miscellaneous chemical products	5	3
Primary metal industries	3	2
Fabricated metal products	5	3
Industrial machinery and equipment	4	2
Transportation equipment	10	5
Motor vehicles and equipment	10	5
Motor vehicles and car bodies	7	4
Motor vehicle parts and accessories	3	2

**Table 4. Number and Percent Distribution, of Fatal Occupational Injuries by Industry, Michigan, 1999 (continued)**

1/ Industry	<u>Fatalities</u>	
	Number	Percent
<b>Transportation &amp; public utilities</b>	<b>19</b>	<b>10</b>
Trucking and warehousing	12	7
Trucking and courier service, except air	11	6
Local trucking, without storage	5	3
Trucking, except local	5	3
Electric, gas and sanitary services	3	2
 <b>Wholesale trade</b>	 <b>7</b>	 <b>4</b>
Wholesale trade - durable goods	5	3
 <b>Retail trade</b>	 <b>25</b>	 <b>14</b>
Automotive dealers and service stations	4	2
Eating and drinking places	14	8
Drinking places	5	3
 <b>Finance, insurance and real estate</b>	 <b>4</b>	 <b>2</b>
Real estate	3	2
Real estate operators and lessors	3	2
 <b>Services</b>	 <b>23</b>	 <b>13</b>
Business services	3	2
Miscellaneous repair services	3	2
Miscellaneous repair shops	3	2
Health services	4	2
Legal services	5	3
 2/ <b>Government</b>	 <b>12</b>	 <b>7</b>

1/ Classified according to the Standard Industrial Classification Manual, 1987 Edition.

2/ Includes fatalities to workers employed by governmental organizations regardless of industry.

NOTE: Totals for major categories may include subcategories not shown separately.

Percentages may not add to totals due to rounding.

SOURCE: U. S. Dept. of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries.

**Table 5. Number and Percent Distribution of Fatal Occupational Injuries  
by Source of Injury, Michigan, 1999**

<b>Source of Injury</b>	<b>Number</b>	<b>Percent</b>
<b>Chemicals and chemical products</b>	<b>7</b>	<b>3.8</b>
<b>Containers</b>	<b>2</b>	<b>1.1</b>
<b>Furniture and fixtures</b>	<b>2</b>	<b>1.1</b>
<b>Machinery</b>	<b>23</b>	<b>12.6</b>
Agricultural and garden machinery	3	1.6
Construction, logging and mining machinery	8	4.4
Excavating machinery	3	1.6
Material handling machinery	3	1.6
Metal, woodworking, & special material machinery	7	3.8
Special process machinery	1	0.5
<b>Parts and materials</b>	<b>9</b>	<b>4.9</b>
Building materials - solid elements	2	1.1
Fasteners, connectors, ropes, ties	1	0.5
Machine tool and electric parts	4	2.2
Electric parts	4	2.2
Metal materials--nonstructural	1	0.5
Molten or hot metals, slag	1	0.5
Vehicle and mobile equipment parts	1	0.5
Tires, inner tubes, wheels	1	0.5
<b>Persons, plants, animals and minerals</b>	<b>11</b>	<b>6.0</b>
Animals and animal products	2	1.1
Food products, fresh or processed	3	1.6
Nonmetallic minerals, except fuel	5	2.7
Dirt, earth	4	2.2
Plants, trees, vegetation not processed	1	0.5
Trees, logs	1	0.5
<b>Structures and surfaces</b>	<b>25</b>	<b>13.7</b>
Floors, walkways, ground surfaces	21	11.5
Floors	8	4.4
Ground	9	4.9
Other structural elements	1	0.5
Walls	1	0.5
Structures	3	1.6
Buildings--office, plant, residential	1	0.5

**Table 5. Number and Percent Distribution of Fatal Occupational Injuries  
by Source of Injury, Michigan, 1999  
(continued)**

Source of Injury	Number	Percent
<b>Tools, instruments and equipment</b>	<b>4</b>	<b>2.2</b>
Handtools--nonpowered	4	2.2
<b>Vehicles</b>	<b>62</b>	<b>34.1</b>
Air vehicle	4	2.2
Highway vehicle, motorized	47	25.8
Automobile	18	9.9
Truck	25	13.7
Van - passenger or light delivery	2	1.1
Plant and industrial powered vehicles, tractors	7	3.8
Forklift	5	2.7
Tractor	2	1.1
Rail vehicle	3	1.6
Water vehicle	1	0.5
<b>Other Sources</b>	<b>36</b>	<b>19.8</b>
Ammunition	22	12.1
Bullets	22	12.1
Atmospheric and environmental conditions	10	5.5
Fire, flame, smoke	9	4.9
Steam, vapors, liquids	3	1.6
<b>Unknown</b>	<b>1</b>	<b>0.5</b>
<b>Total</b>	<b>182</b>	<b>100.0</b>

Note: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

Source: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries 1999.

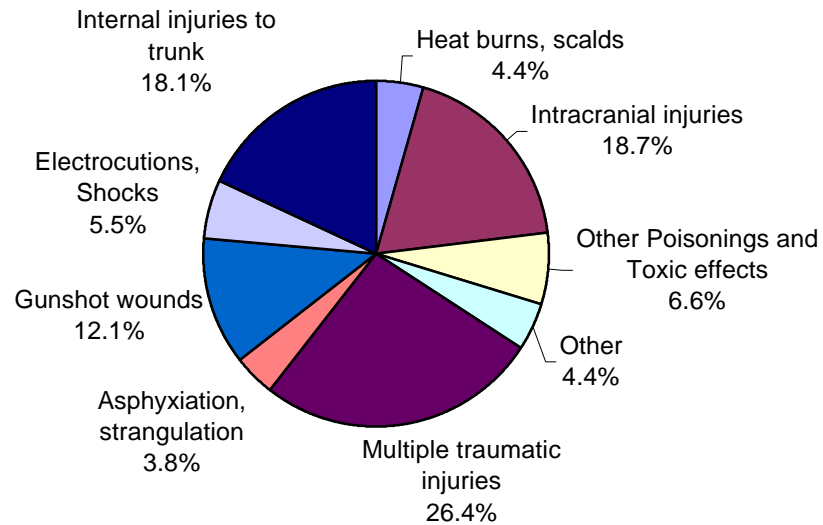
**Table 6**  
**Number and Percent Distribution of Fatal Occupational Injuries**  
**by Part of Body, Michigan, 1999**

<b>Part of Body</b>	<b>Number</b>	<b>Percent</b>
<b>Head</b>	<b>45</b>	<b>24.7</b>
Cranial region, including skull	34	18.7
Brain	34	18.7
<b>Neck, including throat</b>	<b>4</b>	<b>2.2</b>
Neck, except internal location of diseases or disorders	4	2.2
<b>Trunk</b>	<b>40</b>	<b>22.0</b>
Chest, except internal location of diseases or disorders	23	12.6
Chest, including ribs, internal organs	23	12.6
Back, including spine, spinal cord	2	1.1
Multiple trunk locations	14	7.7
<b>Body Systems</b>	<b>31</b>	<b>17.0</b>
<b>Multiple Body Parts</b>	<b>62</b>	<b>34.1</b>
<b>TOTAL</b>	<b>182</b>	<b>100.0</b>

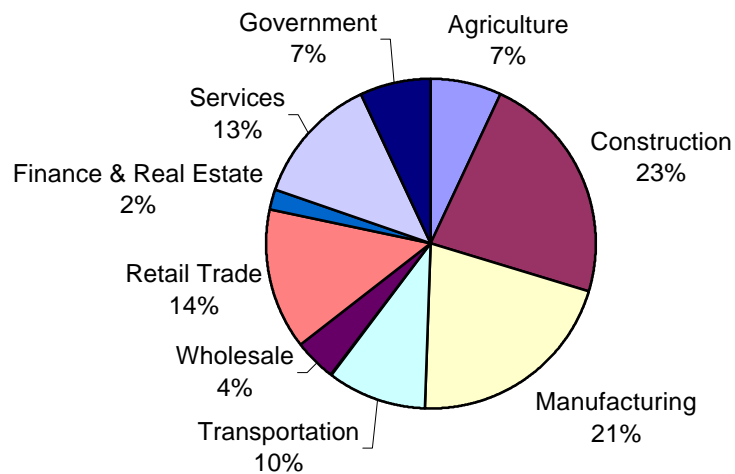
Note: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding.

Source: U.S. Department of Labor, Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries.

**CHART 1**  
**Fatal Occupational Injuries by Nature of Injury Michigan, 1999**



**CHART 2**  
**Fatal Occupational Injuries by Industry Division Michigan 1999**




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SOURCE: Bureau of Labor Statistics, in cooperation with State and Federal agencies, Census of Fatal Occupational Injuries, 1999.

## TECHNICAL NOTES

### **Definitions**

For a fatality to be included in the census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in legal work activity or present at the site of the incident as a requirement of his or her job. These criteria are generally broader than the criteria used by Federal and State agencies administering specific laws and regulations. (Fatalities that occur during a person's commute to and from work are excluded from the census counts)

Data presented in this release include deaths occurring in 1999 that resulted from traumatic occupational injuries. An injury is defined as an intentional or unintentional wound or damage to the body resulting from acute exposure to energy, such as heat or electricity or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Included are open wounds, intracranial and internal injuries, heatstroke, hypothermia, asphyxiation, acute poisonings resulting from a short-term exposures limited to the worker's shift, suicides and homicides, and work injuries listed as underlying or contributory causes of death.

Information on work-related fatal illnesses are not reported in the BLS census and are excluded from the attached tables because the latency period of many occupational illnesses and the difficulty of linking illnesses to work make identification of a universe problematic.

### **Measurement Techniques and Limitations**

Data for the Census of Fatal Occupational Injuries are compiled from various state, federal and local administrative sources--including death certificates, workers compensation reports and claims, reports to various regulatory agencies, medical examiner reports and police reports--as well as news reports. Diverse sources are used because studies have shown that no single source captures all job-related fatalities. Source documents are matched so that each fatality is counted only once. To ensure that a fatality occurred while the decedent was at work, information is verified from two or more independent source documents, or from a source document and a follow-up questionnaire. Approximately 30 data elements are collected, coded, and tabulated, including information about the worker, the fatal incident, and the machinery or equipment involved.



## **Federal/State Agency Coverage**

The Census of Fatal Occupational Injuries includes data for all fatal work injuries, whether they are covered by the Michigan Occupational Safety and Health Administration (MIOSHA) or other federal or state agencies or are outside the scope of regulatory coverage. Thus, any comparison between the BLS census counts and those released by other agencies should take into account the different coverage and definitions being used.

Several Federal and State agencies have jurisdiction over workplace safety and health. The Occupational Safety and Health Administration (OSHA) and its affiliated agencies in States such as Michigan with OSHA approved safety programs cover the largest portion of America's workers. However, injuries and illnesses occurring in certain industries or activities such as coal, metal, and nonmetal mining and highway, water, rail, and air transportation, are excluded from MIOSHA coverage because they are covered by other federal agencies, such as the Mine Safety and Health Administration, and various agencies within the Department of Transportation. Fatalities occurring in activities regulated by federal agencies other than MIOSHA are included in the count of fatal work injuries for Michigan in 1999.

Fatalities occurring among several other groups of workers are generally not covered by any federal or state agencies. These groups include self-employed and unpaid family workers, which accounted for about 13 percent of the fatalities, and laborers on small farms.

Acknowledgments: We appreciate the effort of all agencies that submitted source documents used to achieve the objectives of this program. To collect and publish data on fatal work injuries that are timely, accurate, comprehensive, and useful for injury prevention.

Among these agencies are the Occupational Safety and Health Administration; National Institute for Occupational Safety and Health; the Center for Disease Control and Prevention; the Mine Safety and Health Administration; the U. S. Coast Guard; the Employment Standards Administration (Federal Employees' Compensation and Longshore and Harbor Workers' divisions); the National Transportation Safety Board; the Department of Energy; the National Association of Chiefs of Police; United Steelworkers of America; the Michigan vital statistics registrars, coroners, and medical examiners; the Michigan Bureau of Workers Disability Compensation; the Michigan Department of Community Health, State Registrar and Division of Health Statistics; the Michigan State Police Office of Highway and Safety Planning; Local Police Departments; and the state farm bureaus.

# **MIOSHA**

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Michigan Occupational Safety & Health Act